

What Is Claimed Is:

1. A method of modulating chromatin structure, said method comprising altering expression of PARP-e.
2. The method of claim 1 wherein when expression of PARP-e is increased, the expression of PARP-1 is increased.
3. The method of claim 1, wherein when expression of PARP-e is decreased, the expression of PARP-1 is decreased.
4. The method of claim 1 wherein said chromatin is present in a eukaryotic cell.
5. The method of claim 1 wherein said chromatin is present in a plant cell.
6. The method of claim 1 wherein said chromatin is present in an animal cell.
7. The method of claim 6 wherein said cell is an embryonic cell.
8. The method of claim 7 wherein said cell is a stem cell.
9. The method of claim 1 wherein said chromatin structure is selected from the group consisting of heterochromatin and repetitive sequences.
10. The method of claim 2 wherein modulation of chromatin structure results in gene activation.
11. The method of claim 3 wherein modulation of chromatin structure results in gene repression.
12. The method of claim 2, wherein said increased PARP-e expression effects chromatin decondensation.
13. The method of claim 3, wherein said decreased PARP-e expression effects chromatin condensation.

14. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of the nucleotide sequence of the DNA contained in Genbank Accession No. AF533701 (SEQ ID NO: 1) or Genbank Accession No. AF533702 (SEQ ID NO: 10).
15. An isolated nucleic acid molecule comprising the nucleotide sequence of Genbank Accession No. AF533701 (SEQ ID NO: 1) or Genbank Accession No. AF533702 (SEQ ID NO: 10).
16. An isolated PARP-e protein comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 2.
17. An isolated protein comprising an amino acid sequence at least 90% identical to amino acids 1 to 613 of SEQ ID NO. 2 wherein said protein has the activity of modulating chromatin structure.
18. An isolated polynucleotide molecule selected from the group consisting of
  - a) a polynucleotide molecule having at least 95% sequence identity to SEQ ID NO: 1;
  - b) a polynucleotide molecule which is a fragment of a); and,
  - c) a polynucleotide molecule which is the complementary nucleotide sequence of (a) or b).
19. The isolated polynucleotide molecule of claim 18 having SEQ ID NO: 1.
20. An isolated polynucleotide molecule comprising the polynucleotide of claim 18.
21. An isolated PARP-e protein having an amino acid sequence selected from the group consisting of:
  - a) the amino acid sequence as set forth in SEQ ID NO. 2; and,
  - b) the amino acid sequence encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO. 1;
  - c) the amino acid sequence encoded by a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of the nucleotide sequence of the

DNA contained in Genbank Accession No. AF533701 (SEQ ID NO: 1) or Genbank Accession No. AF533702 (SEQ ID NO: 10); and,

d) the amino acid sequence encoded by an isolated nucleic acid molecule comprising the nucleotide sequence of Genbank Accession No. AF533701 (SEQ ID NO: 1) or Genbank Accession No. AF533702 (SEQ ID NO: 10).

22. A method of inhibiting the growth of an insect, comprising:

- a) creating an insertion mutation in the insect PARP-e gene of a first early insect embryo;
  - b) culturing said first embryo to produce an insect of a first mutant strain;
  - c) creating an insertion mutation in the insect PARP-e gene of a second early insect embryo;
  - d) culturing said second embryo to produce an insect of a second mutant strain;
  - e) mating an insect of said first mutant strain with an insect of said second mutant strain;
- wherein larvae that contain both said first and second mutations show inhibited growth as compared to an insect not comprising both said first and second mutations.

23. A method of inhibiting the growth of an insect, comprising:

- a) contacting embryonic insect cells with a composition comprising an effective amount of a dsRNA molecule specific for PARP-e, wherein contact with said dsRNA molecule inhibits growth of said insect.

24. The method of claim 23 or 24, wherein said insect is a *Drosophila* fly.